

REMARKS

Applicants respectfully request reconsideration of the present application in view of the following remarks. Prior to this response, claims 19-36 were pending in the application, of which claims 19, 32, and 36 are independent. In the Office Action mailed November 20, 2006, claims 19-36 were rejected under 35 U.S.C. § 102. After this amendment, claims 19-36 are pending in this application.

I. Objection to the Drawings

The Examiner objected to Figures 7A and 7B because the reference numerals are obscured. Applicants have included herewith a replacement sheet including replacement Figures 7A and 7B, which Applicants believe overcome the Examiner's objection. Applicants respectfully assert that the replacement figures add no new matter.

II. The Examiner's Rejection Under 35 U.S.C. §102(b)

The Examiner rejected claims 19-21 and 23-36 under 35 U.S.C. §102(b) as being anticipated by European Patent No. EP 1118887 A2 ("Sumitomo"). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP 2131. However, because Sumitomo does not disclose each recitation of independent claims 19, 32, or 36, it does not anticipate the rejected claims.

Sumitomo discloses first and second embodiments of a fiber in which both a core region 1 and a cladding region 2 are made of silica glass. Thus, in these first two embodiments of Sumitomo, the material of the core and the cladding regions have the same refractive index. In contrast, Applicants' claim 19 recites "a core region with a material having a refractive index n_{co} and a microstructured region surrounding the core region with a background material having a refractive index n_m which is lower than the refractive index n_{co} ." Claims 32 and 36 include similar recitations. Accordingly, because the material of the core and the cladding regions of these first two embodiments of Sumitomo have the same refractive index, they do not anticipate the rejected claims.

Sumitomo does disclose a third embodiment in which the material of the cladding region 13 has a refractive index lower than the material of the core. Sumitomo at ¶¶79-80, 91. However, Applicants' claim 19 also recites "the distance $\Delta\phi$ between the centers of any couple of adjacent microstructures being at least equal to about λ_p and not higher than about $1.5\lambda_p$, wherein λ_p is the spatial variation length of the electric field intensity in the microstructured region." Independent claims 32 and 36 include similar recitations. In their specification, Applicants teach that $\lambda_p = 2 \cdot (\rho_2 - \rho_1) / (\ln(I_1/I_2))$. Spec. at 5. Sumitomo discloses that the distance between the centers of any couple of adjacent microstructures in this third embodiment is $6.2 \mu\text{m}$.¹ However, Sumitomo does not disclose the

¹ In the Office Action, the Examiner asserts that Sumitomo discloses a distance between adjacent microstructures of between $1.48 \mu\text{m}$ to about $6.2 \mu\text{m}$. However, Sumitomo does not appear to disclose a single embodiment in which the distance between the centers of adjacent microstructures is between $1.48 \mu\text{m}$ (continued...)

spatial variation length of the electric field intensity of this embodiment. Nor does Sumitomo indicate that the distance between the centers of any couple of adjacent microstructures is at least equal to about λ_p and not higher than about $1.5\lambda_p$. Accordingly, Sumitomo discloses nothing to indicate that $6.2\text{ }\mu\text{m}$ falls within the range of about λ_p to about $1.5\lambda_p$ in this embodiment, nor has the Examiner explained his conclusion that Sumitomo discloses this recitation of claims 19, 32 and 36.²

Because Sumitomo does not teach each recitation of claim 19, 32 or 36, it does not anticipate those claims. Furthermore, because claims 20-21, 23-31 and 33-35 depend from either claim 19 or 32, Sumitomo does not anticipate any of these claims. Accordingly, Applicants respectfully request that the 102(b) rejection based on Sumitomo be withdrawn.

(...continued)

to about $6.2\text{ }\mu\text{m}$. Instead, Sumitomo teaches a first pair of embodiments in which the distance between the center of adjacent microstructures is $1.33\text{ }\mu\text{m}$ or $1.66\text{ }\mu\text{m}$ (¶¶61, 63, 68, 71), and another embodiment in which the distance is $6.2\text{ }\mu\text{m}$ (¶79). Sumitomo also discloses comparative examples in which the distance between the centers of adjacent microstructures is various specific values between $1.21\text{ }\mu\text{m}$ and $1.62\text{ }\mu\text{m}$ (¶¶61, 63, 68, 71). However, Sumitomo does not indicate that the variables upon which λ_p depends is the same in each of these embodiments. Accordingly, there is no reason to believe that λ_p is the same for all of these embodiments.

III. The Examiner's Rejection Under 35 U.S.C. §102(e)

The Examiner rejected claims 19-36 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,856,742 B2 ("Broeng"). However, because Broeng does not teach each limitation of independent claims 19, 32 or 36, it does not anticipate any of the rejected claims. As stated above, claim 19 recites an optical fiber comprising a microstructured region in which "the distance $\Delta\phi$ between the centers of any couple of adjacent microstructures being at least equal to about λ_p and not higher than about $1.5\lambda_p$, wherein λ_p is the spatial variation length of the electric field intensity in the microstructured region." Independent claims 32 and 36 recite similar limitations. In their specification, Applicants teach that $\lambda_p = 2^*(\rho_2 - \rho_1)/(\ln(I_1/I_2))$. Spec. at 5.

The Examiner asserts that Broeng teaches this limitation, referring to Figure 11 and columns 17-20 of Broeng. However, while Broeng discusses optical fibers having various distances between adjacent microstructures, it does not teach that the distance between the centers of any couple of adjacent microstructures is at least equal to about λ_p and not higher than about $1.5\lambda_p$. Nor does Broeng disclose all the information necessary to determine λ_p for the embodiments disclosed therein. For example, Broeng does not disclose the

(...continued)

² As discussed above, the first two embodiments of Sumitomo do not anticipate Applicants' claims 19, 32, or 36 because the material of the core and the material of the cladding region of those embodiments have the same refractive index. However, even if their core material and cladding-region material had different refractive indexes, Sumitomo does not indicate that the distance between adjacent microstructures in those embodiments would be at least equal to about λ_p and not higher than about $1.5\lambda_p$.

distance between the center of the fiber and the center of the outermost microstructure for any of the disclosed embodiments. Nor does Broeng disclose the magnitude of the electrical field intensity at various distances from the center of the fiber for any of the disclosed embodiments. Thus, Broeng does not teach providing a microstructured region in which the distance between the centers of any couple of adjacent microstructures is at least equal to about λ_p and not higher than about $1.5\lambda_p$.

Furthermore, claims 19, 32, and 36 all recite a microstructured region with a background material having a refractive index lower than the refractive index of the core material. While Broeng discloses that the effective refractive index of the core material is higher than the effective refractive index of the cladding region, that does not indicate that the refractive index of the core material is higher than the refractive index of the cladding material, as the microstructures in the cladding region would lower the refractive index of the cladding region. Furthermore, the specific examples disclosed in Broeng in columns 17-20 relate to fibers in which the material of the core region is the same as the background material of the microstructured region.

Because Broeng does not disclose each recitation of claims 19, 32, or 36, it does not anticipate any of those claims. Nor does Broeng anticipate any of claims 20-31 or 33-35, all of which depend from either claim 19 or 32. Accordingly, Applicants respectfully request that the §102(e) rejection based on Broeng be withdrawn.

IV. Conclusion

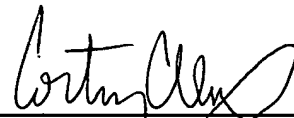
In view of the foregoing remarks, Applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims. The preceding arguments are based only on the arguments in the Office Action, and therefore do not address patentable aspects of the invention that were not addressed by the Examiner in the Office Action. The claims may include other elements that are not shown, taught, or suggested by the cited art. Accordingly, the preceding argument in favor of patentability is advanced without prejudice to other bases of patentability.

Please grant any extensions of time required to enter this response and charge any required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON,
FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: March 19, 2007

By: 
Cortney Alexander
Reg. No. 54,778